

**SEARCH REQUEST FORM**

Scientific and Technical Information Center

Requester's Full Name: Roy D. Gibson Examiner #: 74499 Date: 12/20/02  
 Art Unit: 3739 Phone Number 308-3520 Serial Number: 09/905,715  
 Mail Box and Bldg/Room Location: \_\_\_\_\_ Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: System & Method for Cooling the Cortex to Treat Neurocardiac Seizures  
 Inventors (please provide full names): Steven M. Rothman

Earliest Priority Filing Date: 5/4/01

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

*Please search method claims only (Class 1-10)*

*A Peltier chip is more commonly called a Peltier device or cooler or thermoelectric cooler.*

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**STAFF USE ONLY**

	Type of Search	Vendors and cost where applicable
Searcher: <u>J.L. Walko</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: <u>305-8587</u>	AA Sequence (#) _____	Dialog <u>✓</u>
Searcher Location: <u>CP2-2208</u>	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: <u>12/24/02</u>	Bibliographic <u>✓</u>	Dr.Link _____
Date Completed: <u>12/24/02</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>53m</u>	Fulltext <u>✓</u>	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet <u>✓</u>
Online Time: <u>47m</u>	Other _____	Other (specify) _____

# CURRENT RESEARCH PROJECTS

## I. Clinical Trials of Anti-epileptic Drugs

- Levetiracetam in the treatment of partial seizures in children  
*Dr. Trevathan, Principal Investigator*  
*Drs. Arnold, Thio, Dodson, Co-Investigators* [MORE information](#)
- Lamotrigine in the treatment of partial seizures in young children (under the age of 2 years)  
*Dr. Trevathan, Principal Investigator*  
*Drs. Arnold, Thio, Dodson, Wong, Co-Investigators* [MORE information](#)
- Lamotrigine for generalized tonic-clonic seizures  
*Dr. Trevathan, Principal Investigator*  
*Drs. Arnold, Thio, Wong, Co-Investigators*

## II. Epidemiology & Health Services Research

- Epidemiology of status epilepticus among hospitalized patients in the United States  
*Dr. Trevathan, Mr. Fitzgerald*
- The impact of status epilepticus upon the risk of death among hospitalized children and adults  
*Dr. Trevathan, Mr. Fitzgerald*

## III. Clinical Epilepsy

- Predictors of outcome among children and adolescents who have epilepsy surgery  
*Drs. Arnold, Trevathan*
- Predictors of intractability in children with partial epilepsy  
*Drs. Arnold, Trevathan*
- Seizure relapse after discontinuation of the ketogenic diet  
*Dr. Arnold*
- Language regression and EEG features of Landau-Kleffner syndrome  
*Dr. Arnold*
- Flumazenil PET and decision-making in non-lesional epilepsy  
*Dr. Ojemann*
- Functional MRI and cortical stimulation mapping of language  
*Dr. Ojemann*
- Pre and post-operative evaluation of memory with functional MRI

*Dr. Ojemann*

- Outcome of trans-parahippocampal selective amygdalo-hippocampectomy for medial temporal lobe epilepsy in children

*Drs. Park, Blackburn*

- Cerebrospinal fluid markers of neuronal damage following seizures in children

*Dr. Wong*

- Improvement of magnetic resonance techniques for imaging seizures

*Dr. Zempel*

#### IV. Basic Neuroscience Research in Epilepsy

- Epileptogenesis in dysplastic cortex

*Drs. Brunstrom, Wong, Yamada*

- Cellular mechanisms of the ketogenic diet

*Drs. Thio, Yamada*

- The role of glycine in normal and abnormal synaptic transmission in cortex

*Dr. Thio*

- Basic mechanisms of epileptogenesis in the developing nervous system

*Dr. Wong*

- Animal models of epilepsy

*Dr. Wong*

- Neuronal damage from hypoglycemia and seizures

*Dr. Yamada*

#### RECENT PUBLICATIONS BY PEDIATRIC EPILEPSY CENTER MEMBERS

Connolly AM, Chez MG, Pestronk A, Arnold ST, Mehta S, Deuel RK. Serum autoantibodies to brain in Landau-Kleffner variant, autism, and other neurologic disorders. J. Pediatr 1999;134:607-613.

Guberman AH, Besag FM, Brodie MJ, Dooley JM, Duchowny MS, Pellock JM, Richens A, Stern RS, Trevathan E. Lamotrigine-associated rash: risk/benefit considerations in adults and children. Epilepsia 1999;40:985-991.

Hill MW, Wong M, Amarakone, Rothman SM <sup>inventor</sup> Rapid cooling aborts seizure-like activity in rodent hippocampal-entorhinal slices. Epilepsia 2000; 41:1241-1248.

Kerrigan JF, Shields WD, Nelson TY, Bluestone DL, Dodson WE, Bourgeois BF, Pellock JM, Morton LD, Monaghan EP. Ganaxolone for treating intractable infantile spasms: a multicenter, open-label, add-on trial. Epilepsy Res 2000 Dec;42(2-3):133-9

McDermott KB, Ojemann JG, Petersen SE, Ollinger JM, Snyder AZ, Akbudak E, Conturo TE, Raichle ME. Direct comparison of episodic encoding and retrieval of words: an event-related fMRI study. Memory 1999 Sep-Nov;7(5-6):661-78.

Ojemann JG, Park TS. Surgical treatment of pediatric epilepsy: Surgery and outcome. In Bourgeois BDF, Dodson EW (ed): Pediatric Epilepsy Diagnosis and Therapy, Demos, New York, 2001, pp589-599.

Robinson S, Park TS, Blackburn LB, Bourgeois BF, Arnold ST, Dodson WE. Transparahippocampal selective amygdalohippocampectomy in children and adolescents: efficacy of the procedure and cognitive morbidity in patients. J Neurosurg 2000;93:402-409.

Rosen HJ, Ojemann JG, Ollinger JM, Petersen SE. Comparison of brain activation during word retrieval done silently and aloud using fMRI. Brain Cogn 2000 Mar;42(2):201-17

Shinnar S, Rapin I, Arnold S, Tuchman RF, Shulman L, Ballaban-Gil K, Maw M, Deuel RK, Volkmar FR. Language regression in childhood. Pediatr Neurol 2001;24:185-191.

Smith CD, Trevathan E, Zhang M, Anderson AH, Avison MJ. Functional MRI evidence for task-specific activation of developmentally abnormal visual association cortex. Ann Neurol 1999;45:515-518.

Thio LL, Wong M, Yamada KA. Ketone bodies do not directly alter excitatory or inhibitory hippocampal synaptic transmission. Neurology 2000;54:325-331.

Trevathan E, Murphy CC, Yeargin-Allsopp M. The descriptive epidemiology of infantile spasms among Atlanta children. Epilepsia 1999;40(6):748-751.

Wong M, Schlaggar BL, Landt M. Postictal cerebrospinal fluid abnormalities in children. J Pediatr 2001;138:373-377.

Wong M, Trevathan E. Infantile spasms. Ped Neurol 2001;24:89-98.

Wong M, Yamada KA. Cyclosporine induces epileptiform activity in an *in vitro* seizure model. Epilepsia 2000;41:271-276.

Wong M, Yamada KA. Developmental characteristics of epileptiform activity in immature rat neocortex: a comparison of four in vitro seizure models. Dev Brain Res 2001;128:113-120.

## CLINICAL TRIALS

The Pediatric Epilepsy Center conducts clinical trials of newer anti-epileptic drugs and other newer therapies for epilepsy in children. All ongoing studies may not be listed on this webpage.

Please call 314-454-4089 for more information.

### **Levetiracetam for Intractable Partial Seizures in Children**

Edwin Trevathan, M.D., Principal Investigator

Tracy Connell, C.P.N.P., Nurse Coordinator

Please contact Dr. Trevathan or Ms. Connell at 314-454-4089 for more information

*Dr. Ojemann*

- Outcome of trans-parahippocampal selective amygdalo-hippocampectomy for medial temporal lobe epilepsy in children

*Drs. Park, Blackburn*

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*Have this*

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Kerrigan JF, Shields WD, Nelson TY, Bluestone DL, Dodson WE, Bourgeois BF, Pellock JM, Morton LD, Monaghan EP. Ganaxolone for treating intractable infantile spasms: a multicenter, open-label, add-on trial. Epilepsy Res 2000 Dec;42(2-3):133-9

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Rapid cooling aborts seizure-like activity in rodent hippocampal-entorhinal slices.

Hill M W; Wong M; Amarakone A; Rothman S M

Department of Neurology, Washington University School of Medicine, St. Louis, Missouri, USA.

Epilepsia (UNITED STATES) Oct 2000, 41 (10) p1241-8, ISSN 0013-9580  
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PURPOSE: As a preliminary step in the development of an implantable Peltier device to abort focal neocortical seizures in vivo, we have examined the effect of rapid cooling on seizures in rodent hippocampal-entorhinal slices. METHODS: Seizure-like discharges were induced by exposing the slices to extracellular saline containing 4-aminopyridine (50 micromol/L). RESULTS: When we manually activated a Peltier device that was in direct contact with the slice, seizures terminated within seconds of the onset of cooling, sometimes preceding a detectable decrease in temperature measured near the top of the slice. However, activation of the Peltier device did not stop seizures when slices were no longer in direct physical contact with the device, indicating that this was not a field effect. When cooling was shut off and temperature returned to 33 degrees C, bursting sometimes returned, but a longer-term suppressive effect on seizure activity could be observed. In two of our experiments, a custom computer program automatically detected seizure discharges and triggered a transistor-transistor logic pulse to activate the Peltier device. In these experiments, the Peltier device automatically terminated the slice bursting in less than 4 seconds. When the Peltier device was placed in contact with the normal, exposed cortex of a newborn pig, we found that the cortical temperature decreased rapidly from 36 degrees C to as low as 26 degrees C at a depth of 1.7 mm below the cooling unit. CONCLUSIONS: These experiments show that local cooling may rapidly terminate focal paroxysmal discharges and might be adapted for clinical practice.

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